Ames National Laboratory

The Simulation, Modeling, and Decision Science Program at the Ames Laboratory is focused on the fundamental research question of how to improve decision making and learning for complex systems in which energy, people, and the environment meet. Within this broad domain our research seeks to address two questions:

- How do we readily use the information from disparate sources (e.g., models, data, and other information elements) that must be integrated together to create decision-making environments that can accurately represent the fidelity and breadth of a complex system?
- How can we integrate the analytical decision-making process with a more natural, engaging, and user-centered decision-making process?

That is, we are seeking to develop understandings and tools that create engaging and practical decision-making environments that enable humans to interact with each other and reach collaborative decisions about the critical complex systems within our world. Our approach to this effort is built on the natural decision-making processes and tools humans use in their everyday lives. Specifically, we are developing federated model sets as a tool for end-to-end modeling of complex systems; examining narrative, paradata, and metaphor as tools to enable human engagement; and developing cyber-physical devices as engineering and designing tools for complex energy systems.

Collaboration—We welcome the opportunity to collaborate on projects that utilize our research skills in information/model integration, decision science, narrative theory, and information science and are focused on

- end-to-end modeling of complex systems,
- the integration of narrative and metaphor into human-decision making systems,
- integrated computational environments, or
- the application of various tools (e.g., augmented reality, virtual reality, wearables) to decision making.

In addition, we use virtual/augmented reality, computer visualization, and human computer interaction in support of our core research interests, and we often collaborate with other groups in these areas.